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EXAMINER	
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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 24

Application Number: 08/699844

Filing Date: 08/20/96
Appellant(s): DAVID R. DETTMER

Jose W. Jimenez
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed 30 August 1999.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) ***Status of Claims***

The statement of the status of the claims contained in the brief is correct.

Claims 2, 27, 28 and 37 have been amended subsequent to the final rejection.

(4) ***Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. The amendment (s) after final rejection filed on 3/29/99 has been entered.

(5) ***Summary of Invention***

The summary of invention contained in the brief is correct.

(6) ***Issues***

The appellant's statement of the issues in the brief is correct.

(7) ***Grouping of Claims***

Appellant's brief includes a statement that claims do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8). The claims do not stand or fall together because the independent claims recite the same subject matter and also, Appellant does not argue them distinctly.

(8) ***Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

4715063	Haddad et al.	12/87
4843621	Potratz	6/89
4629829	Puhl et al.	12/86
5297203	Rose et al.	3/94
5553137	Nyhart et al.	9/96
5668871	Urbanski	9/97
5692042	Sacca	11/97
5768364	Karnowski et al.	6/98

(10) New prior art

No new prior art has been applied in this examiner's answer.

(11) Grounds of Rejection

In light of the amendment after final of 03/29/99 presented by appellant in the brief, the rejection of claims 2, 27, 28 and 37 under 35 USC 112, second paragraph is hereby withdrawn.

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. Claims 1-2, 4, 7-9 and 20-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Odhams (GB 2174578A) in view of Karnowski et al. (US Patent 5,768,364).

Regarding claim 1, Odhams shows in Fig. 1 a duplex portable handset speakerphone (loudspeaking telephone), that comprises: a microprocessor (microprocessor M11); a hands-free receive register (hands-free microphone 1) coupled to the microprocessor M11; a hands-free transmit register (loudspeaker 9) coupled to the microprocessor M11; a memory circuit having an algorithm executable by the microprocessor for operating the speakerphone (microprocessor inherently includes a memory circuit with a look up table for executing the algorithm); a first analog-to-digital converter (A/DC transmit C10) coupled to the hands-free microphone 1; a second analog-to-digital converter A/DC receive C12; a first programmable digital attenuator (attenuator transmit AT7) in a speech path and coupled to the microprocessor M11 and to a speaker (loudspeaker 9); a second programmable digital attenuator (attenuator transmit AT3) in another speech path and coupled to the microprocessor M11 and to a microphone 1. However, Odhams does not specifically disclose a microprocessor that determines peak volume levels in both speech paths.

Karnowski et al. disclose a software speakerphone that comprises a microprocessor 160 which performs level detection and/or attenuation under software control. Microprocessor 160 performs attenuation in software by multiplying one of the digitized audio signals by an attenuation constant and level peak detection is accomplished by software (see: col. 5, lines 8-11).

Karnowski et al. further disclose microprocessor 160 which continuously monitor audio signal and determine the peak level through software means (see: col. 7, lines 47-49). Note that Odhams does detect gain levels via C10 and C12, but does not state what statistic he uses to gauge signal level. The microprocessor by software means can measure average level, or RMS level or peak level. Since Odhams does not state which one to use, one of ordinary skill of the art would have been motivated to examine similar art for teachings of how to measure gain signal levels. Karnowski teaches one to use peak levels. It would have been obvious to utilize the teachings of Karnowski i.e. peak detection in Odhams in order to supply the needed function of signal level detection using a type of measurement well known in the art.

Regarding claims 2 and 4, as discussed above, they are rejected for the reasons set forth for claim 1. Furthermore, Odhams in view of Karnowski et al. shows a preamplifier A2 coupled to the microprocessor 160, and also determines peak volume levels in both speech paths and adjusts attenuators AT3, AT7. The microprocessor 160 is an integrated circuit controller that inherently includes a codec. Fig. 1 shows a telephone line interface.

Regarding claim 7, as discussed above, it is rejected for the reasons set forth for claim 1. Furthermore, Odhams in view of Karnowski et al. discloses microprocessor 160 which directs the reading of the hands-free registers (microphone 150 and loudspeaker 152), and determining the peak volume levels of both speech paths; and digitally adjust the microphone and speaker gains in relation to the peak volume levels (microprocessor 160 performs level detection and/or attenuation under software control and attenuation is performed in software by multiplying one of

the digitized audio signals by an attenuation constant and level peak detection is accomplished by software (see: col. 5, lines 8-11); microprocessor 160 continuously monitor audio signal and determine the peak level through software means (see: col. 7, lines 47-49).

Regarding claims 8-9, Karnowski et al. discloses microprocessor 160 which is controlled by a software timer and peak detection.

Regarding claim 20, as discussed above, it is rejected for the reasons set forth for claim 1. Furthermore, in the above combination, Karnowski et al. discloses microprocessor 160 which monitors said audio information signal to determine a peak signal level for said audio information signal, comparator C22, compares said peak signal level to said stored noise threshold information and adjusts the amplitude of said audio information signal when said amplitude is greater than said noise threshold information.

Regarding claim 21, Odhams in view of Karnowski et al. disclose microphone 1 which is an audio register having information representing said peak signal level of said audio information signal.

Regarding claim 22, Odhams in view of Karnowski et al. discloses microprocessor 160 which uses an algorithm for accomplishing steps of monitoring, comparing and adjusting.

Regarding claim 23, Odhams in view of Karnowski et al. discloses digital attenuators AT3 and AT7 which is controlled by microprocessor 160 to adjust the amplitude of the audio information signal.

Regarding claim 24, as discussed above, it is rejected for the reasons set forth for claim 1. Furthermore, the logic decision circuit is met in Odhams in view of Karnowski et al. as microprocessor 160.

Regarding claim 25, Odhams in view of Karnowski et al. discloses a microprocessor 160

Regarding claim 26, Odhams in view of Karnowski et al. shows in Fig. 1 microprocessor 160 that is configured and arranged to regulate the balance of the speech paths during full duplex communication.

Regarding claim 27, Odhams in view of Karnowski et al. shows microprocessor 160 that is further adapted to implement gain control and regulate gain proportions along at least one of the two speech paths.

Regarding claim 28, Odhams in view of Karnowski et al. shows microprocessor 160 that is further adapted to implement gain control and regulate gain proportions along both speech paths.

Regarding claims 29-30, 31, 33 and 34, Odhams in view of Karnowski et al. teaches if a speech signal is detected in one channel and not in the other, or if a speech signal in one channel has an amplitude which is larger by at least preset threshold than the speech signal in the other channel, the attenuators are so adjusted that the value of the attenuation in said one channel is decreased in a step-wise manner while the value of the attenuation in the other channel is increased in a step-wise manner (see: Odhams, page 1, lines 31-34).

Regarding claims 32 and 37, Odhams in view of Karnowski et al. discloses hysteresis in the comparison between transmit and receive audio signal levels to determine a speakerphone mode. The use of hysteresis prevents the rapid oscillation between transmit and receive modes when the transmit audio signal level and receive signal levels are very close to one another. Hysteresis calculations are performed in software generally. See: col. 5, lines 23-30.

Regarding claim 35, as discussed above, it is rejected for the reasons set forth for claim 1.

Regarding claim 36, as discussed above, it is rejected for the reasons set forth for claim 7.

(12) New ground of rejection

This Examiner's Answer does not contain any new ground of rejection.

For the above reasons, it is believed that the rejections should be sustained.

(11) Response to Argument

Regarding claims 1-2, 4, 7-9 and 20-37, Appellant argues that "the combination of Odhams and Karnowski neither teaches nor suggests the use of a microprocessor that determines peak volume levels in both speech paths and adjusts gain levels in the speech paths in response to the peak volume levels".

The Examiner, respectfully, disagrees with Appellant's argument because as stated in the last office action, Odhams teaches a microprocessor that detects gain levels via C10 and C12, but does not state what statistic he uses to gauge signal level. Clearly, the microprocessor by software means can measure average level, or RMS level or peak level. It would be

obvious to one of ordinary skill of the art to determine either one of them since all of them are well known in the art. Furthermore, Karnowski teaches a microprocessor which could continuously monitor the audio signal and determine the peak level through software means (see: col. 7, lines 47-49). Thus, it would be obvious to utilize the teachings of Karnowski i.e., peak detection of Odhams for the purpose of supplying the needed function of signal level detection using a type of measurement in a well known manner.

In response to appellant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Karnowski teaches a microprocessor which could continuously monitor the audio signal and determine the peak level through software means (see: col. 7, lines 47-49) .

Regarding claim 9, Appellant argues that the limitation of "Claim 9 is directed to a method of operating a duplex speakerphone that has a ROM in the handset that contains a stored algorithm that uses a software timer that generates a hardware interrupt to the microprocessor on every speech frame so that one of the hands-free registers can be read by a software peak detector" is not found in the combination of the cited references.

The Examiner, respectfully, disagrees with Appellant's argument because Karnowski teaches step 320 wherein microprocessor (160, 260) waits enough time for the peak detector (e.g. 146) to acquire the peak of the transmit signal. Since the lowest frequency of interest is 300 Hz, the microprocessor (160, 260) should wait approximately 3.3 milliseconds to ensure that the peak detection signal is seen. Clearly, Karnowski teaches a software timer. Therefore, the hardware inherently interrupts when software timer determines a peak detection.

In response to appellant's argument with regard to claims 20-23 "No mention is made of storing noise threshold information and then using it to compare with the adjusted audio signal information", the Examiner, respectfully, disagrees with Appellant's argument because this limitation was discussed in the rejection of claim 20 in the last office action wherein the combination of Odhams and Karnowski teaches microprocessor 160 which monitors said audio information signal to determine a peak signal level for said audio information signal (see: Karnowski, col. 7, lines 47-49), comparator C22 (see: Fig. 2 of Odhams) which obviously compares said peak signal level to said stored noise threshold information and adjusts the amplitude of said audio information signal when said amplitude is greater than said threshold information.

In response to Appellant's argument with regard to claims 24-26, 27, 31 and 34-37 Odhams teaches a full duplex speakerphone that comprises a microprocessor M11. Odhams teaches a microprocessor 160 for determining peak level through software means. Appellant's argument is mainly based on Karnowski where Karnowski is used in combination with

Odhams. In response to Appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

2. Contrary to appellant's arguments, the combined references would have been obviously satisfied the claimed limitations.

For the above reasons, it is believed that the rejections should be sustained.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques M. Saint-Surin whose telephone number is (703) 305-4760. The examiner can normally be reached on Mondays through Thursdays from 8:30 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen, can be reached on (703) 305-4386. The fax phone number for this Group is (703) 308-5403.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900 .

Respectfully submitted,

Vivian Chang

VIVIAN CHANG
PRIMARY EXAMINER

JACQUES SAINT-SURIN
PATENT EXAMINER

Jacques M. Saint-Surin

Jacques M. Saint-Surin
November 22, 1999